Annex A: Dominant Maneuver

General

Dominant Maneuver is the ability of joint forces to gain positional advantage with decisive speed and overwhelming operational tempo in the achievement of assigned military tasks. Widely dispersed joint air, land, sea, amphibious, special operations, and space forces, capable of scaling and massing force or forces and the effects of fires as required for either combat or noncombat operations, will secure advantage across the range of military operations through the application of information, deception, engagement, mobility, and countermobility capabilities.

Dominant Maneuver requires forces that are adept at conducting sustained and synchronized operations throughout the full spectrum of operations, in all environments, and with joint and combined forces to rapidly achieve objectives from dispersed locations, at reduced risk, and with fewer platforms and a smaller logistics requirement. Dominant Maneuver forces must take advantage of the enablers provided by Full Dimensional Protection, Precision Engagement, Focused Logistics, and Information Superiority to engage enemy forces with the least risk, highest combat overmatch advantage, and lowest use of scarce resources. However, the Army, as a ground combat force, must recognize that Dominant Maneuver is the preeminent operational concept and that the remaining concepts support achieving that end.

The Army must inject critical information technologies into the Legacy Force systems to sustain combat overmatch, take advantage of the Dominant Maneuver enablers, and gain critical experience and knowledge with emerging technologies to support the goal of a seamless transition to the Objective Force.

Dominant Maneuver capabilities are provided primarily by the Army's ground combat maneuver forces (infantry and armor units), by the mobility forces (Engineer units), and by the aviation forces (Army aviation units). To ensure the Army continues to sustain the capability to provide Dominant Maneuver forces to the joint force commander, the Army must plan and implement the modernization of these forces, recapitalize (rebuild and selected upgrades), and maintain legacy systems to sustain readiness while transforming the Army from the Legacy Force and Interim Force to the Objective Force.

Critical to the Transformation process is the synchronization of readiness, recapitalization, and Transformation while mitigating the risk to the Army's contract with America to win the Nation's wars and fulfill all missions assigned by the National Command Authorities (NCA).

We must adapt our leadership, training and education, doctrine, organizations, and materiel to achieve Full Spectrum Dominance. The Army will modernize through the development of the Objective Force, quickly field an Interim Force to provide strategic

responsiveness and operational dominance across the full spectrum of operations and environments, and selectively upgrade, rebuild, and maintain critical legacy systems to ensure the Army is ready to fight and win, any place, at any time.

While the Army Modernization Plan focuses on the materiel solutions to achieve Dominant Maneuver throughout the full spectrum of operations, the materiel programs integrate people, leadership, doctrine, education and training and organizational structure to support the concept of joint Dominant Maneuver. The Army seeks to provide the joint force commander with Army systems embedded in units that can attack targets successfully, with fewer but more potent platforms, and with less ordnance, while achieving objectives more rapidly and with reduced risk. To outpace and outmaneuver any enemy, the Army must empower its warfighters through Information Superiority, Precision Engagement, Focused Logistics, Full Dimensional Protection, and Dominant Maneuver.

The Army's equipping programs are specifically organized by functional areas that relate to their battlefield missions. These functional areas serve as vehicles for specific program management and implementation throughout the Army. Each functional area brings a unique and essential capability to the Army. The combination and synergy of all functional areas is what makes the Army an effective instrument in supporting the National Military Strategy (NMS) and *Joint Vision 2020 (JV 2020*), in fulfilling its contractual obligation to fight and win the Nation's wars when needed and successfully fulfilling all missions assigned by the NCA.

This annex discusses the unique contributions that the Combat Maneuver and Mobility and the Aviation functional areas make to the Army's overall capability in support of Full Spectrum Dominance through Dominant Maneuver. Additionally, it describes how the strategy for equipping the Maneuver and Mobility functional area and the Aviation functional area fits into the overarching Army modernization and investment strategies that are designed to implement Transformation in the coming years.

Overall, the strategy for modernization of the Maneuver and Mobility and the Aviation functional areas aims fundamentally at supporting the Army's Transformation process within the existing resource constraints affecting the FY02 President's Budget (PB02) while providing dominant ground maneuver/combat overmatch in support of *JV 2020*. The final portion of this annex assesses the current state of modernization in supporting Transformation in light of these existing constraints.

Ground Combat Maneuver and Mobility Forces

Overview

Ground combat maneuver and mobility systems provide dominant overmatch for decisive operations throughout the spectrum of conflict. They provide the Nation's ultimate guarantee for conventional, high-intensity combat through lethality, tactical mobility, and survivability while seizing and retaining objectives or exploiting success.

In the challenging and complex environment of the 21st century, the Army will continue to provide Dominant Maneuver land power for the Nation. Central to that land power are the ground combat maneuver and mobility forces. They provide the Nation the capability to physically place a dominant force on the ground to impose our national will throughout the full spectrum of operations. Maneuver, mobility and accompanying soldier systems are directly involved in all seven of the Army's missions: deploy, fight and win Major Theater Wars (MTWs), promote regional stability through presence, deter aggression and coercion through readiness, prepositioning and responsiveness, and conduct Small Scale Contingencies (SSCs) all as part of a joint force. As the Services assimilate new technologies, one constant remains—assuring attainment of strategic objectives requires the decisive projection of sustained maneuver and mobility forces—"boots on the ground" operating as part of a joint force.

Combat Maneuver and Mobility Modernization in Support of Transformation

Overview

Like the rest of the Army, maneuver and mobility forces will transform to their Objective Force end state along three major paths—the Legacy Force, the Interim Force, and the Objective Force. The Army will maintain and improve warfighting capabilities of the Legacy Force through modernization, recapitalization, and digitization. The sustainment and improvement of legacy systems will focus on the Counterattack Corps to ensure combat overmatch and mitigate risk as the Army transforms to the Objective Force. Improving survivability, lethality, and maintainability are critical components of the strategy. To support Dominant Maneuver readiness for the joint force, the Army seeks to capitalize on the insertion of information-age technology through digitization, lethality capabilities through improved acquisition technology and advanced munitions, thus providing our highly trained soldiers with the tools necessary to

fight as the dominant land component of the joint force anywhere at anytime.

During the Army's Transformation, we will sustain combat maneuver and mobility forces currently in the Legacy Force to guarantee near-term warfighting readiness. We will recapitalize selected mechanized maneuver and mobility forces to extend the service life of Legacy Force systems, reduce operating and support costs, and improve system reliability, maintainability, safety, and effectiveness. At the same time, we will continue to enhance heavy and light force lethality and survivability. Our legacy combat maneuver and mobility forces will maintain the capabilities we currently have and add others through technology insertions, as they become available, thus ensuring our ability to meet our nonnegotiable contract to fight and win the Nation's wars as we transform.

The upgrade of our legacy systems through the integration of digitization and Operations and Support (O&S) cost savers will enhance the Army's ability to achieve Dominant Maneuver. Expanded situational awareness, improved lethality at longer ranges, reduced logistical requirements, and improved survivability will allow the joint force commander to conduct sustained and synchronized operations from dispersed locations.

Systems

Light Forces. Our modernization of light combat maneuver forces will ensure combat overmatch for the five types of Legacy Force infantry (air assault, airborne, light, mechanized and Ranger) in the close, personal, and brutal fight. The fielding of Land Warrior, an Objective Force system, will significantly enhance the lethality, survivability, and tactical mobility of our dismounted infantry. Soldiers will have more situational awareness and precision target acquisition (day and night) and can fire while unexposed. Survivability is increased with a light, improved ballistic helmet and lighter, more protective body armor. Fratricide will be reduced because of improved situational awareness and the ability to tell friend from foe. The soldier load will be lighter, providing improved tactical mobility.

Acceleration of the Line-of-Sight Antitank weapon (LOSAT) along with the revalidation of the tube-launched, optically-tracked, wire-guided missile (TOW) fire-and-forget system, coupled with fielding of the Mortar Fire Control System (MFCS), will enhance legacy light force direct fire and indirect fire capabilities. The LOSAT consists of kinetic energy missiles (KEM) and a second generation Forward-Looking Infrared Radar (FLIR) (SGF) mounted on an air mobile modified, expanded-capacity High Mobility Multipurpose Wheeled Vehicle (HMMWV) chassis. The KEM defeats all predicted future armored vehicles, giving the LOSAT great potential as an Objective Force anti-armor weapon system. The TOW fire-and-forget system (which fires from legacy platforms), provides a long-range chemical energy munitions anti-armor capability. The fire-and-forget technology increases both the survivability and lethality of our legacy light forces. The MFCS will allow infantry mortars to send and receive digital calls for fire messages and

possesses the ability for first-round fire for effect.

Mechanized Forces. Our modernization and recapitalization efforts for legacy mechanized forces give priority to maintaining near-term warfighting capability of a Counterattack Corps. Enhancements will include upgraded variants of fielded equipment, such as the M1A2 Abrams System Enhancement Program (SEP) tank, the M1A1 D, the M2A3 Bradley Fighting Vehicle (BFV), the M2A2 recapitalized Bradley, the Engineer Bradley Fighting Vehicle (ODS-E) and the Long Range Advanced Scout Surveillance System (LRAS3). The Abrams Integrated Management (AIM) and the Bradley recapitalization program extend the lives of both the Abrams M1A1 and Bradley fleet to meet warfighting requirements as the Army transforms to the Interim and Objective Forces. The rebuild of the M88A1 Recovery Vehicle for the Active Component (AC) and the Reserve Component (RC) is a critical life-extension program to ensure the heavy force is supported throughout Transformation. The Wolverine provides an assault bridge to enable heavy force mobility. The Grizzly, currently unfunded, provides an essential obstacle breaching capability that does not exist anywhere in the force.

Interim Force. Combat maneuver and mobility forces initiated Interim Force implementation in FY00 by beginning the conversion of two Fort Lewis-stationed units—a 2nd Infantry Division heavy brigade and a 25th Infantry Division light brigade—to an initial configuration. Each of these brigades will be provided with commercial off-the-shelf (COTS) items, surrogate vehicles, digitized communications, and equipment currently available in the Army inventory. These initial brigades will accomplish two goals. First, they will give combat maneuver and mobility forces an enhanced capability for operational deployment to meet worldwide requirements. Second, they will validate an organizational and operational model for transformation of combat maneuver and mobility forces to interim and Objective Force configuration. The FY02-07 Plan fields and sustains six IBCTs, including a RC brigade. The first IBCT will be operational in 2003 and the second IBCT will be operational by 2004. The first two IBCTs at Fort Lewis will not be experimental formations; they will be fully combat-capable and the vanguard of the future Objective Force.

The Interim Armored Vehicle (IAV), based on the Light Assault Vehicle (LAV III), will be the centerpiece combat and combat support platform for the IBCTs of the Interim Force. It will fulfill an immediate requirement for a strategically deployable (C-17/C-5) and operationally deployable (C-130) brigade capable of rapid movement anywhere on the globe in a combat-ready configuration. We will field two variants of the IAV: the Mobile Gun System (MGS) and the Infantry Carrier Vehicle (ICV). The family of IAVs is centered on the ICVs. There will be eight additional configurations of the ICV: Reconnaissance Vehicle, Mortar Carrier, Commander Vehicle, Fire Support Vehicle, Engineer Squad Vehicle, Medical Evacuation Vehicle, Antitank Guided Missile Vehicle, and

Nuclear, Biological, and Chemical (NBC) reconnaissance vehicles.

Objective Force. The critical path of Transformation leads to the Objective Force. Today, the science and technology (S&T) community is working hard to develop answers to questions we have asked: How do we reduce the armored volume in combat vehicles while increasing survivability? How do we increase deployability without sacrificing survivability and lethality? The culminating phase of this S&T for combat maneuver and mobility forces will be the achievement of Objective Force capabilities in the Future Combat Systems (FCS). The FCS is envisioned as a digitized, system of systems, land-combat capability with multimission functionality. FCS's primary design characteristics include networked command and control (C2) on the move; beyond line-of-sight (BLOS) direct fires; advanced, long-range, precision indirect fires; standoff sensors; countermine capability; and robotics. When technologies are mature, and when the production lines are ready, we will field the FCS in unit sets.

The S&T development of a common missile that may be employed on a variety of platforms, both ground and air, will reap significant benefits in operational flexibility for the warfighter through a common caliber solution that will profoundly reduce the logistics footprint of deployed forces. The development and production of the common missile will yield a reduction in life-cycle costs over separate and distinct systems currently fulfilling ground and air missile requirements.

Soldier Systems. The S&T development of the objective family of small arms is a complementary effort leading to improving the lethality of dismounted soldiers in combat maneuver formations of the Objective Force. The Objective Individual Combat Weapon (OICW) is the next generation, individual weapon system for U.S. Armed Services. This modular, dual-barrel weapon system includes revolutionary 20mm air-bursting munitions; standard NATO 5.56mm kinetic energy projectiles; and integrated fire control. The system will provide decisively violent and suppressive target effects out to a range of 1,000 meters—a significant increase in the lethality of the dismounted soldier. A replacement for selected M16 rifles, M4 carbines, and M203 grenade launchers, the OICW provides the lethality block upgrade for the Land Warrior.

Seamless Transition. The maintenance of a trained and ready force to ensure operational readiness and technology transfers from the upgraded legacy systems and interim systems to the Objective Force is the focus of the modernization effort. Certain technologies developed first in legacy systems, as part of modernization programs, will ultimately lead to Objective Force platform technology insertions. The SGF drive-by wire technology and a remotely operated weapons platform in the Grizzly, Force XXI Battle Command, Brigade and Below (FBCB2) integration, power plant improvements, munitions development, digital components and integrated communications systems (voice activation, wireless intercoms), and the

STAMIDS family of standoff minefield detection systems provide the material transition to the Objective Force. The experiences our soldiers and commanders will have with these emerging technologies will lead to a nearly seamless transformation to the maneuver and mobility forces of the Objective Force.

Discussion of Equipment

M1A2 Abrams System Enhancement Program (SEP)

Description. The M1A2 SEP is an upgrade of the fielded M1A2 tank. M1A2 SEP upgrades enhance the target acquisition system and computer electronics. SEP upgrades seek to reduce the signature through thermal management, bridge the gap between the precision engagement systems and Dominant Maneuver by enhancing long-range acquisition using advanced FLIR technology and improved battlespace awareness through digitization. Mission processing units in the turret and hull are the heart of the core electronic systems. These complementary, redundant units manage the data/utility bus for all subsystems within the tank. The tank's computer architecture was revised to be compatible in the common operating environment. The inclusion of the following systems: a Global Positioning System (GPS) receiver coupled with existing Position/Navigation (POSNAV) system, Integrated Combat Command and Control (IC3) hosting FBCB2 software; SGF combines to improve the lethality of the system along with digital C2 and situational awareness for the commander. SGF components of the fire control system provide increased capability in target acquisition and engagements through improved, high-resolution thermal images ranging in power from 3X to 50X. The Commander's Display Unit (CDU) possesses dual displays: a color display for digital maps and graphic control measures for IC3, and a display for the SGF thermal images from the Commander's Independent Thermal Viewer (CITV). A Thermal Management System (TMS) is added to provide cooling to the turret computer components to reduce heat and increase reliability, with a secondary purpose to increase crew endurance in hot climates. The production of M1A2 SEP will include integration of the new Abrams Crusader common engine. This new engine will dramatically reduce O&S costs. The M1A2 SEP induction platform is the M1 and the M1A2. Using these induction platforms significantly reduces the unit cost.

Operational Requirement. The requirement is to close with and destroy enemy ground forces using Survivability—capable of surviving against the full range of battlefield threats; Lethality—capable of destroying any known threat on the modern battlefield; Mobility—key

components include speed, acceleration, and maneuverability; Information Dominance—key components are situational awareness and digital C2. Critical to maintaining combat overmatch is the development of munitions that take advantage of the increased target acquisition capability of the M1A2 SEP.

Program Status. Procurement of the M1A2 SEP for fielding to the Counterattack Corps began in FY00 with the First Unit Equipped (FUE) in July 2000. The total procurement of 1,174 M1A2 SEPs will provide sufficient capability for the Counterattack Corps. The procurement and fielding will continue through FY12. The Army is taking risk by not fielding M1A2 SEP to Army prepositioned stocks or to other AC units.

M1A1 Abrams Integrated Management (AIM)

Description. The AIM overhaul concept is the most cost-effective solution to address the problems of rising tank sustainment costs and increasing readiness concerns. The AIM process overhauls an old M1A1 tank to original factory standards and applies all applicable Modification Work Orders (MWOs). The AIM process uses a partnership among Program Manager (PM)-Abrams, the Army Materiel Command (AMC), and General Dynamics. The hulls and turrets are dismantled at Anniston Army Depot (ANAD). The hulls are overhauled at ANAD and the turrets are stripped, prepared, and shipped to Lima Army Tank Plant (LATP) for overhaul and final assembly. Once the hulls are completely overhauled, they are shipped to LATP where hulls are married up with a turret for final assembly. The AIM overhaul program is the optimum time/location to complete applied improvements. The current engine, AGT 1500, was last built in 1982 and is the current engine for the AIM tank. Over 12,000 AGT 1500 engines were built using 1960s technology. The AGT 1500 accounts for over 64% of the O&S costs. The production of the new Abrams Crusader Common Engine will significantly decrease O&S costs (from $40,000 to $6,000 per tank, per year) when it is integrated into the AIM rebuild and upgrade line.

Operational Requirement. The readiness of the aging tank fleet must be improved, combat overmatch must be maintained, and O&S costs must be reduced. Eighty-three percent of the tank fleet requires recapitalization. Presently, the tank ranks second highest in Army O&S costs. In fact, the Abrams accounts for one-half the repair cost of the entire ground combat fleet.

Program Status. The procurement and fielding of the M1A1 AIM tank is

critical for O&S cost reduction as well as overall fleet age. At 135 per year, the fielding to units will continue through FY11. While current procurement and fielding plans do not allow the fleet to meet fleet age requirements, it will significantly reduce costs. Critical components include the Abrams Crusader Common Engine integration, survivability packages, and other critical modifications. Side armor protection and SGF integration is underfunded and places M1A1 AIM tanks at risk against project threat formations. The FUE was in the 4th Infantry Division and was digitized at the same time. Engine production from FY04 through FY13 provides 2,005 engines. Approximately 988 M1A1 AIM and M1A2 SEP tanks will be fielded without the new engine and will require retrofit unless this program is accelerated. Retrofit will require returning the Abrams tank to the AIM line for installation. While all M1A2 SEP tanks will eventually have a new engine only half of the M1A1 D tanks will have the new engine unless additional funding is provided. The Army National Guard (ARNG) will receive AIM tanks cascaded from the AC and, where funds are available, receive rebuilt tanks directly from the AIM program.

M1A1 D (Digitized)

Description. The M1A1 D is a digitized M1A1 that provides improved C2 and situational awareness using an appliqued computer and Far Target Locate (FTL) capability. The appliqued computer utilizes FBCB2 software. The FTL capability is the key enabler in making an M1A1 D. FTL consists of a North Finding Module (NFM), a Digital Interface Unit (DIU) and an Eye Safe Laser Range Finder (ESLRF). FTL allows the crew to digitally report the location of enemy targets to +/- 10 meters. FTL is also the means by which situational awareness is initially inputted into the FBCB2 system. The M1A1 D is interoperable in the common operating environment and supports both the FY00 4th Digital Division and FY04 III Corps requirements.

Operational Requirement. The requirement is to close with and destroy enemy ground forces using Survivability—capable of surviving against the full range of battlefield threats; Lethality—capable of destroying any known threat on the modern battlefield; Mobility—key components include speed, acceleration, and maneuverability; and Information Dominance—key components include situational awareness and digital C2I.

Program Status. The procurement and fielding of the M1A1 D kits continues through FY10. The FUE was 1st Battalion, 66th Armored, 4th Infantry Division in October 2000. The M1A1 D is part of the III Corps and will be

fielded to both the 4th Infantry Division and 3rd Armored Cavalry Regiment to meet that goal. Additional funding is required to field digitization kits to Abrams tanks in Army prepositioned stocks and to ARNG units. Fully funding the new engine will improve the capability of the M1A1 D and reduce O&S costs.

M2A3 Bradley Fighting Vehicle System (BFVS)

Description. The A3 Bradley Fighting Vehicle (BFV) emerged as a result of a threat and capabilities assessment, designed to ensure that the mechanized infantry can overmatch the threat on the future Force XXI battlefield. The M2A3 is the first Infantry Fighting Vehicle (IFV) that is technologically equal to the Abrams tank. It completes correction of all Desert Storm deficiencies, capitalizes on ten years of mechanized infantry experience, and integrates Army Horizontal Technical Integration (HTI) initiatives (e.g., SGF).

The A3 insures overmatch by increasing the ability to acquire, identify, and engage over the A2, in both day and night conditions. The A3 Bradley allows the crew to acquire more targets faster by adding another second generation thermal sight for the commander. The Improved Bradley Acquisition System allows the crew to engage targets faster and more accurately by enabling first burst on target, eliminating the need for a sensing round. The Position/Navigation (POS/NAV) system enhances the crew's navigation capability and their ability to pinpoint and identify friendly and enemy positions. The A3's new integrated digitized C2 system provides for a near-real-time integrated data link between the A3 Bradley and other combat vehicles. The C2 system is integrated with the vehicle fire control and POS/NAV system, providing the crew with the ability to identify and hand off targets to other BFVS, tanks, helicopters, artillery, and mortars. The A3 Bradley will facilitate enhanced C2, provide greater lethality, survivability, mobility, and sustainability required to defeat current and future threat forces. Most importantly, the Bradley A3 also enables operational compatibility with the Abrams M1A2 System Enhancement Program (SEP) main battle tank.

Bradley Recapitalization Description. The Bradley family of vehicles includes the M2A0, M2A2, M2A2 ODS, M2A2 ODS-D, M2A3, and the M2A2(R). These platforms will serve as the mechanized infantry platform for the legacy containment and counteroffensive forces. However, electronic obsolescence, lethality, and survivability issues must be resolved for the Bradley to maintain dominant overmatch through 2020. Until the technology to replace the M2 fleet with the FCS is developed, selective

upgrades must be applied to the Bradley to achieve a decisive edge over emerging threat capabilities. Therefore, the U. S. Army Infantry Center (USAIC) and PM-Bradley have developed a Bradley recapitalization plan that includes limited upgrades for maintaining overmatch and for reducing operating and sustainment cost during Transformation to the Objective Force. This recapitalization plan meets mandated Department of Defense (DoD) guidance to achieve a Bradley system half-life metric for zero-age/zero-mile vehicles, and integrates selected system upgrades into the M2A3 Bradley that are necessary to meet A3 Operational Requirements Document (ORD) requirements and to reduce O&S costs. The Bradley recapitalization program ensures Bradley IFV viability throughout Transformation. The resultant composition of the force will be M2A3s in the Counterattack Corps, M2A2(R)s in the forward-deployed force and enhanced Separate Brigades (eSBs), and cascaded Operation Desert Storm (ODS) Bradleys in the ARNG divisions. Final determination of the force will be dependent on FCS fieldings.

M2A2(R) Description. The Bradley recapitalization program will zero-age/zero-mile 1,936 M2A2 Bradleys. At the end of this recapitalization process, each A2 Bradley will be transformed into an M2A2(R). The advantage of the A2(R) approach is that the DoD half-life metric is achieved, along with the proliferation of a common platform throughout the Bradley fleet. The A2(R) will realize significant reductions in fleet O&S costs. In addition, the A2(R) architecture takes advantage of current technology and provides flexibility for future technology insertions.

M2A2 ODS-D Description. The ODS-D increases system lethality over the M2A2 by adding FBCB2 C2 capability. FBCB2 provides for a near-real-time integrated data link between the M2A2 ODS and other combat vehicles. The FBCB2 C2 capability will be integrated with the ODS's laser rangefinder, providing the crew with the ability to identify and hand off targets to other BFVs, tanks, helicopters, artillery, and mortars. In addition to FBCB2, the ODS possesses a PGS/POSNAV system that enhances the ODS's ability to maneuver with the rest of the combined arms team. The integration of GPS with the laser rangefinder allows rapid, accurate calls for fire via FBCB2. The addition of bench seats in the ODS Hull allows squad members the ability to dismount and remount faster. Crew survivability is also enhanced with the capability to integrate the Battlefield Combat Identification System (BCIS) and the missile countermeasure device. As M2A3 and M2A2(R)s are fielded to the AC and eSB units, ODS-Ds will be cascaded to ARNG divisions.

Operational Requirement. The BFV provides mobile, protected transport of an infantry squad to critical points on the battlefield and performs cavalry scout and other claimant (Bradley-equipped combat engineer, fire support and Stinger teams) missions.

Program Status. Between FY98 and FY08, the Army will complete the modification of 1,042 A2 Bradleys to the A3 Bradley while other Bradley recapitalization is unfunded. The

Bradley recapitalization effort must be fully funded to maintain combat overmatch, minimize electronic obsolescence, and provide unprocurable spares for the remaining legacy Bradley fleet. Moreover, a fully funded Bradley recapitalization effort is required for the Bradley fleet to achieve its half-life (10 years) by FY10. Not counting the A0 Bradleys, the oldest Bradleys in the fleet, the Bradley fleet will have an average fleet age of 14.2 in FY10 unless the Bradley recapitalization program is fully funded.

Grizzly

Description. The Grizzly is used to conduct in-stride simple and complex obstacle breaches. This platform is an M1 Abrams chassis-mounted system (mobility/survivability to match the maneuver force) with full-width (V-shaped) Mine Clearing Blade (MCB) with automatic depth control and power driven arm for obstacle reduction and digging. The commander's control station has a communications package, enhanced vision devices, and weapons (a remote-fired, 50-caliber machine gun and grenade launched screening smoke for self-defense). The system is manned by a two-person crew and is capable of breaching a 600-meter complex obstacle in 21 minutes and an antitank ditch in five minutes. The platform can clear urban rubble and mines buried 12" to 15" deep.

Operational Requirement. The Grizzly incorporates both countermine and counter-obstacle capabilities into a single, survivable system that, in a single pass, creates a full width assault lane trafficable by the entire maneuver force. No alternative solution exists to meet this capability and, without Grizzly, the force depends upon outdated World War II technology used by dismounted soldiers, the sometimes unreliable Mine Clearing Line Charge (MICLIC), and the Armored Combat Earthmover (ACE). The inability to achieve overmatch in breaching capability will cause the operating tempo of the maneuver force to significantly decrease, which reduces task force survivability and limits the commander's maneuver flexibility.

Program Status. Program Budget Decision 745 released on 27 December 1999 removed all funding in FY01 and beyond for fiscal reasons caused by Army Transformation. Two prototypes are pending delivery. The contract expires on 31 August 2001.

Wolverine Heavy Assault Bridge (HAB)

Description. The Wolverine is an MLC 70 assault bridge for heavy forces, providing combat gap crossing capability for the battalion task force. The bridge, carried on an M1A2 SEP chassis, is as mobile and survivable as the maneuver force, spans gaps up to 24 meters, launches in less than 5 minutes, and retrieves in less than 10 minutes. The platform is equipped with

FBCB2 digitization via appliqué and is manned by a two-man crew. The system is a one-for-one replacement for the Armored Vehicle Launched Bridge (AVLB), which has an average fleet age of 24 years, reduced gap crossing capability of fifteen meters for MLC 70 traffic, cannot keep pace with the M1/2 based force and relies on low-density repair parts and maintenance systems not common to the supported maneuver force.

Operational Requirements. The Wolverine provides heavy forces with a

military load class 70 assault crossing capability of gaps up to 24 meters with similar system mobility, survivability, sustainability, and logistics supportability as the supported force.

Program Status. Program Decision Memorandum 745 released on 27 December 1999 removed all FY01 and out-funding for this program. Funding was restored through FY02 for 44 LRIP vehicles. FUE occurred in February 2001. Failure to buy Wolverine will require retention of old M48/M60 based AVLBs with an average fleet age of 24 years. Currently, the program is unfunded for echelons above division units in the Counterattack Corps.

M113 Family of Vehicles

Description. The M113 family of vehicles (FOV) consists of over 70,500 vehicles, has 20 different variants, and platforms, and is in service in Army units. The M113 FOV is on nearly half of the tracked vehicle fleet in a mechanized infantry or armored heavy division including the M113A2/A3, M577A2/A3, M981A2/A3, M1064A2/A3, and M1068A2/A3. The family provides transport for troops, antitank, fire direction, smoke, mortar, cargo carrier, and C2 systems.

Operational Requirement. The fleet is required for the next 20-plus years and must be modified to increase mobility and survivability, and to install operational enhancements. Operation Desert Storm highlighted the need to improve the mobility, survivability, chemical protection, driver's night vision, fuel system, and command post auxiliary power units (APUs) for the fleet.

Airborne Standoff Minefield Detection System (ASTAMIDS)

Description. ASTAMIDS detects recently buried and surface antitank mines (including Field Artillery Scatterable Mines (FASCAM)). ASTAMIDS provides real-time

feedback on critical minefield locations to the brigade task force commander. The Night Vision Lab (NVL) utilizing the advanced electro-optic/infrared (EO/IR) sensor is developing an interim system. The SASO system detects buried, weathered in antitank mines and collects data to be postprocessed by software and soldiers.

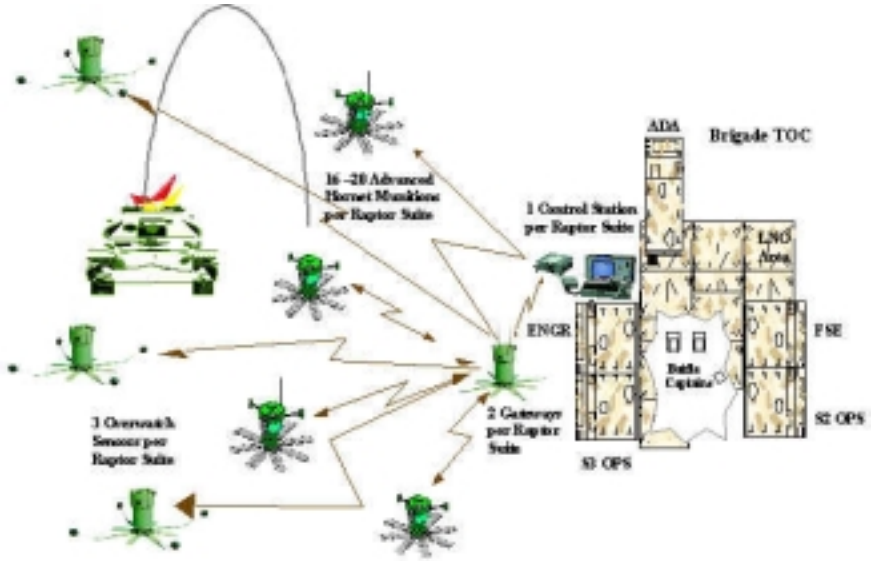
Operational Requirement.

ASTAMIDS provides an airborne capability to detect antitank mines. The tactical ASTAMIDS will fly on an airborne platform and support the brigade task force commander. The Stability and Support Operations (SASO) ASTAMIDS will fly on a UH-60 and support the Military Operations Other Than War (MOOTW) commander. An interim tactical ASTAMIDS capability is being developed using existing sensor technology.

Program Status. ASTAMIDS is in concept exploration. Contract award is expected in FY03 and FUE in FY09.

Raptor, Intelligent Combat Outpost

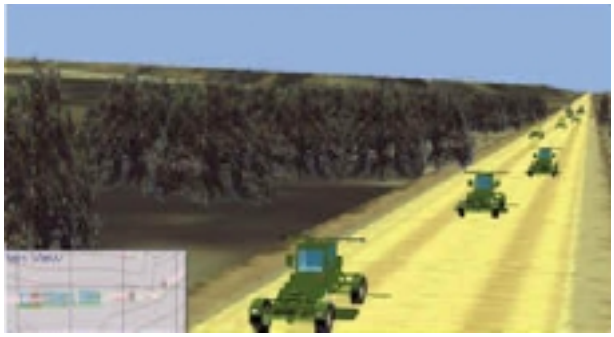
Description. Raptor is a tactical obstacle consisting of a Ground Control Station (GCS), advanced Hornet munitions, one or more gateways (artificial intelligence), Advanced Overwatch Sensors (AOS), and long-haul communications. Core Raptor obstacles will be hand-emplaced at ranges 35-50 km forward of the maneuver brigade Tactical Operations Center (TOC), and will detect, classify, and autonomously engage threat heavy and light tracked and heavy-wheeled vehicles based upon programmed attack tactics. Follow-on Raptor variants will incorporate longer-range communications and deep delivery capabilities to support Raptor employment 300km forward of the controlling TOC; identify-friend-or-foe capability to distinguish between threat and friendly vehicles; and advanced integration with artillery, aviation, and intelligence systems to provide real-time threat data to these systems; and will cue friendly fires to attack threat targets deep.



Operational Requirement. Raptor is a suite of lethal or nonlethal munitions, sensors, communications, and software that work in consonance to enable the commander to protect his battlespace and influence the actions of his adversaries. Raptor will be used to detect, track, classify, and report the approach of enemy vehicles and aircraft, then arm munitions to attack, delay, disrupt, or destroy the enemy's movement.

Program Status. The Raptor ORD is being finalized and will be submitted to Training and Doctrine Command (TRADOC) for approval in 2001.

Ground Standoff Minefield Detection System (GSTAMIDS)



Description. GSTAMIDS Block 0 clears a 20km route in 12 hours using a tele-operated detection vehicle, Mine Protected Clearance Vehicle (MPCV), and a towing vehicle with proofing trailers. GSTAMIDS Block 1 clears a 40km route in six hours. The detection vehicle utilizes a multisensor, mine-detection suite consisting of metal detection, Ground Penetrating Radar (GPR), and IR to find all mines. The MPCV provides soldiers a blast-protected vehicle from which to remotely operate the lead-detection vehicle and mine-detection subsystems. The MPCV supports mine confirmation and neutralization subsystems. GSTAMIDS Block 0 is a contingency-based item; a total of 10 systems will be fielded to contingency stocks from FY03-FY04. GSTAMIDS Block 1 will be fielded to corps engineer battalions (12 systems per corps engineer battalion).

Operational Requirement. The mission of GSTAMIDS Block 0 and Block 1 is to conduct route-clearance operations, eliminating all antitank mines. GSTAMIDS Block 2 will provide a forward-looking capability for mine avoidance. GSTAMIDS is a spiral development effort to provide an incremental, near-term capability to execute on-road countermine missions.

Program Status. GSTAMIDS Block 0 is in year two of a three-year Engineering and Manufacturing Development (EMD) phase. GSTAMIDS Block 0 begins government testing in September 2001. GSTAMIDS Block 0 begins production in FY02. GSTAMIDS Block 1 begins production in FY05.

Hornet Wide Area Munition (WAM)

Description. Hornet autonomously detects threat vehicles at distances up to 600m, then classifies and engages targets at ranges up to 100 meters. Hornet is a top attack munition, and launches sublet containing an IR sensor and an explosively formed penetrator warhead over the top of the target, firing at the target vehicle from above, resulting in a mobility or firepower kill. Hornet munitions may be employed in a series of randomly

spaced, off-route clusters to ambush enemy convoys (gauntlet pattern), to disrupt enemy formations (area disruption pattern), to reinforce bottom attack mines against breachers (overwatch pattern), or to engage high-value targets or deny key terrain in the enemy's rear area (deep interdiction).

Operational Requirement. The need exists for a smart munition that can autonomously search, detect, classify, engage, and destroy enemy tracked, armed, and heavy-wheeled vehicles at standoff distances up to at least 100 meters. Target vehicles include tanks, enemy breachers, light armored vehicles, reconnaissance vehicles, tank transporters, target erector launchers, and target erector launcher radars.

Program Status. Basic Hornet is in production. Materiel release is pending. Advanced Hornet and its control station are in EMD. Advanced Hornet procurement will begin in FY04.

Handheld Standoff Mine Detection System (HSTAMIDS)

Description. HSTAMIDS is a handheld mine detector capable of detecting all metallic and nonmetallic antitank and antipersonnel mines. This system combines the maturing technology of GPR and improved metal detection to provide a high probability of detection for both large and small metallic and nonmetallic antitank and anti-personnel mines. HSTAMIDS will significantly improve detection of the smaller, low-metal antipersonnel mines with a probability of detection for all mine types in excess of 95%. HSTAMIDS will reduce the percentage of false detections associated with operating in combat zones, by allowing the operator to "tune-out" the metallic clutter that affects the Army's legacy mine detector, the AN/PSS-12. The (IR forward-looking detection subsystem component of HSTAMIDS has been deferred to a future product improvement effort. The overall design weight of the HSTAMIDS will be comparable to that of the AN/PSS-12 for both detector head weight and control equipment.

Operational Requirement. HSTAMIDS is a handheld mine detector capable of detecting all metallic and nonmetallic antitank and antipersonnel mines. HSTAMIDS will be a significant improvement over the current capability for detection of the smaller low-metal mines.

Program Status. HSTAMIDS successfully completed Prototype Definition and Risk Reduction (PDRR) and entered EMD in November 2000. HSTAMIDS will begin operational

testing in FY03 and production in FY04.

Mongoose, Explosive Standoff Minefield Clearer (ESMC)

Description. Mongoose is an explosive countermine system that creates a vehicular lane by explosively neutralizing all surface and buried antitank mines from a position outside the lethal blast radius of the mines. Mongoose consists of a rocket-propelled explosive neutralization system (ENS) with shaped charge munitions embedded in a scalable, oblong net. The system is deployed and detonated from inside the towing vehicle without exposing the crew to direct or indirect fires. Mongoose is capable of neutralizing antitank mines with up to eight inches of overburden. Mongoose neutralizes mines by attacking the explosive component of the mine, not the fusing mechanism. Modeling shows the Mongoose neutralizes 95% of the antitank mines that fall beneath the explosive array. Mongoose will support both the medium force and heavy force with nets sized (length x width) and tailored to counter likely enemy threats. The smaller, lighter medium force variant will be towed by the Engineer squad's IAV. The mechanized force version of the Mongoose will be towed by either the Engineer squad M113 or another armored Task Force vehicle.

Operational Requirement. Mongoose provides an explosive clearing capability to the IBCT and Legacy Force units, and is capable of neutralizing all mines regardless of fuze type. Mongoose uses shaped charge munitions spaced on a net to attack the explosive fill of antitank mines instead of relying on blast overpressure to defeat mines. Mongoose is designed in two sizes, a heavy and light version optimized for Interim and Legacy Forces.

Program Status. The program was approved to enter EMD in 2QFY98. The ORD was revised to develop an explosive countermine system to support the unique requirements of the IBCT. The ORD was approved in October 2000. FUE is FY06.

Common Bridge Transporter (CBT)

Description. The CBT is a HEMMT chassis with a load-handling system installed (similar to the Palletized Load System (PLS)). It is capable of hauling the Improved Ribbon Bridge (IRB), Standard Ribbon Bridge (SRB), Bridge Erection Boat (BEB), Bailey Bridge, Medium Girder Bridge (MGB), and the Heavy Dry Support Bridge (HDSB). The adapter interface between the truck and components are the Bridge Adapter Pallet (BAP) for bays, the Improved Boat Cradle (IBC) for boats, and PLS flatracks for fixed bridging. The CBT is capable of transporting a

10-ton load and hauling a loaded (10-ton) PLS trailer. It can upload or download palletized loads in one minute.

Operational Requirement. The CBT, along with the PLS trailer, is the prime mover for all future bridging systems with 56 of these systems assigned to each multi-role bridge company. This allows for the palletized movement of all bridging assets and the rapid installation of bridges in difficult terrain, as well as the movement of massive quantities of general cargo when bridging assets are not required.

Program Status. Fielding started in 1998 and is adequately funded in the PB02.

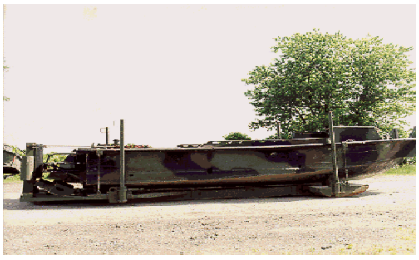
Improved Ribbon Bridge (IRB)

Description. The IRB will replace the old SRB found in Engineer assault float bridge companies. The improved IRB bays are modified ribbon bays possessing better hydrodynamics and floatation capability and providing the capability of rafting or bridging MLC 70T traffic in currents up to 8 fps. It also has stronger ramp sections that support access/egress across higher riverbanks.

Operational Requirement. The IRB is an improvement over the SRB and provides a greater degree of flotation, allowing crossings in faster currents as well as increased survivability against small arms fire and small artillery fragments. The bays can be connected in one minute and can also be connected to the SRB. The ramp bays can be hydraulically articulated to two meters. The IRB will be employed in the same general manner as the SRB. However, it will be able to cross faster water with higher MLCs and with banks that are up to two meters high.

Program Status. The program is adequately funded in the PB02.

Bridge Erection Boat (BEB)



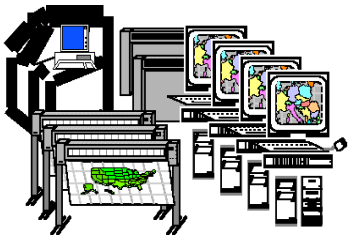
Description. The new BEB is being procured to replace the old worn-out BEBs in our current inventory. We are also making modest improvements to the old design to permit the safe and efficient handling of the new ribbon bridge components in fast water. The BEB will be transportable on the CBT.

Operational Requirement. The BEB has two primary uses: to connect bays and fabricate the ribbon bridge system, and to propel rafts made from ribbon bridge bays as they ferry vehicles before a ribbon bridge is completed. Heavy rafts are often the initial crossing means for tanks and other fighting vehicles because they are faster to assemble than bridges and can operate from multiple sites to

reduce their vulnerability. The boat will be operated and maintained in all geographical areas where flowing streams or rivers may become obstacles to the tactical mobility of U.S. and NATO ground forces.

Program Status. The program is adequately funded in the PB02.

Digital Topographic Support System (DTSS)



Description. The DTSS integrates COTS hardware and laboratory-developed software package to provide terrain information to the warfighter. These capabilities are being provided in four distinct configurations: DTSS-Light (L), DTSS-Deployable (D), DTSS-Base (B) and DTSS-High Volume Map Production (HVMP). Additionally, the DTSS-Survey (S) will provide a downsized configuration capable of supporting a commander's geodetic survey requirements. The DTSS-L is highly mobile and capable of supporting a full range of military operations, as well as peacetime stability and support operations. The DTSS-D provides a COTS configuration that is capable of operating all of the terrain analysis software. The DTSS-D consists of transportable containerized workstations and peripherals that can be set up to augment the tactical configurations. The DTSS-D does not include tactically deployable shelters and vehicles or tactical communications. The DTSS-B was procured in response to urgent requirements of regional CINCs to develop the capability to generate terrain information over sparsely mapped areas to support training, mission rehearsal, and contingency operations. The DTSS-B is designed to supplement NIMA capabilities at the echelons above corps level by providing quick response, special purpose mapping, terrain analysis, and database generation. The DTSS-B includes a classified component that is capable of handling national technical means information in a secure environment. The DTSS-HVMP will provide a tactical capability to rapidly reproduce large volumes of topographic materiel. DTSS-HVMP will be capable of reproducing information from a variety of digital and hardcopy sources via direct digital interfaces. DTSS systems will be deployed from brigade through EAC. The DTSS systems are being developed as part of the Combat Terrain Information Systems (CTIS) program. DTSS is compatible with and interoperable with the Army Battle Command Systems (ABCS), the Joint Technical Architecture-Army (JTA-A), and the Defense Information Infrastructure Common Operating Environment (DII COE). DTSS provides improved database management and distribution, automated feature extraction, improved tactical decision aid functionality, rapid terrain visualization, and improved map reproduction. The survey section will be downsized to a HMMWV configuration.

Operational Requirement. The current terrain analysis, topographic and reproduction support provided by Army Engineer topographic teams is a slow, labor-intensive process that does not meet warfighter needs. The commander must have the ability to rapidly obtain terrain information and topographic products. The DTSS will provide digital maps and updates to commanders and weapon platforms in support of mission planning (e.g., imagery exploitation, cover and concealment, other IPB), rehearsal (e.g., 3D fly through, simulations) and execution (e.g., Common Tactical Picture (CTP), route planning). The DTSS automates terrain analysis and visualization; database development, update, management, and distribution; map reproduction; and geodetic survey support. The Combat Terrain Information Systems (CTIS) modernization plan emphasizes the development of a combined, integrated, tactically deployable, fully autonomous terrain analysis and map reproduction capability.

Program Status. The various DTSS variants are under development and are being fielded in every fiscal year. Some have been recently fielded to the 4th Infantry Division and others will be fielded in the next few fiscal years.

Standard Robotic Systems Program (SRS)

Description. The SRS will be a family of common components that can be installed in existing military ground and special purpose vehicles for tele-operation. The first systems will provide the capability for remote control of basic vehicle operation such as driving, turning, stopping, and controlling dozer blades and tracks. Additional capabilities such as

controlling respective mission payloads (referred to as user functions), mission planning, air droppable versions, and extended operational distances will be achieved by evolutionary technological upgrades of the baseline system. This will transition robotic technologies in some unmanned ground vehicles (UGV) from limited line-of-sight (LOS) and tele-operation to extended range non-line-of-sight (NLOS).

Operational Requirement. The SRS provides the force with a capability to tele-operate systems when the mission dictates. This increases survivability by removing the soldiers from operating equipment that is in direct contact with performing hazardous tasks.

Program Status. The ORD was approved in October 1999 and received a Milestone I/II approval in November 1999.

Land Warrior

Description. Land Warrior is a first generation, modular, integrated fighting system for infantry soldiers that incorporates an assortment of systems and components, and technologies into

a lethal, survivable, mobile, and more aware soldier system. Land Warrior combines sensors, computers, lasers, geo-location, and radios with a soldier's mission equipment to achieve the Army Vision of enhancing the individual soldier's lethality, survivability, mobility, and situational awareness. The systems approach optimizes and integrates these capabilities, to include integration with the Army Tactical Internet, without adding to the soldier's combat load or logistical footprint. Land Warrior S&T advanced technology components, to include combat identification, enhanced navigation, and system voice control, will be technically inserted to meet objective requirements.

Operational Requirements. The system provides enhanced capabilities to the dismounted soldier in support of the Army Transformation strategy. Dismounted forces will share common Army components and be linked to digital situational data with other weapon systems.

Program Status. Currently, Land Warrior is in EMD phase, focusing on the follow-on Research, Development, Test, and Evaluation (RDT&E) contract for Version 1.0. Land Warrior successfully participated in the September 2000 Contingency Force Advanced Warfighting Experiment at JRTC, Fort Polk, Louisiana.

Trailer-Mounted Volcano

Description. The trailer-mounted Volcano tailors the existing Volcano system to meet the needs of the IBCT. The trailer-mounted Volcano will utilize an M200 (MICLIC) trailer and two racks with 40 canisters per rack.

Operational Requirement. The IBCT requires the capability to emplace scatterable mines as point obstacles to protect the flanks of the maneuver force.

Program Status. Prototype systems are to be built and tested in FY01. These prototypes will be available to the IBCT by 1QFY02.

Rapidly Emplaced Bridge System (REBS)

Description. The REBS is a tactical bridge capable of spanning 13-meter gaps and crossing MLC 30 vehicles. The REBS can be rapidly launched and retrieved by a two-man crew and is transportable by C-130. The REBS will either be trailer-mounted or integrated with the CBT.

Operational Requirement. The IBCT requires an expedient, tactical gap-crossing capability to maintain freedom of maneuver throughout the area of operations. The IAV and other vehicles in the IBCT will have to cross arroyos, wadis, canals, ditches, and other significant linear obstacles that cannot be bypassed or crossed without REBS.

Program Status. The ORD for REBS was approved 13 September 2000. REBS is funded FY01-05. Fielding of REBS is projected to begin in FY03.

Light Armored Vehicle III (Interim Armored Vehicle (IAV))

Description. The IAV is based on the Light Armored Vehicle III. The vehicle will have multiple variants to meet operational requirements of the IBCT. The IAV is an eight-wheel, high, hard steel constructed chassis with the ability to have multiple configurations.

Operational Requirements. The primary goal of the IAV is to be deployable and responsive. The operational requirements require the IAV to be 100% deployable by C-130, to provide decisive capability in complex, urbanized terrain, and to complement an infantry-based force with full spectrum capabilities to enhance survivability, situational awareness, and lethality.

Program Status. The contract was awarded in November 2000 for production schedules to provide platforms at the earliest opportunity.

Future Combat Systems (FCS)

Description. The FCS is a system of systems common platform with specialized subsystems to support infantry, direct fire, engineer, reconnaissance, indirect fire, C2, and other variants. The FCS will be C-130 deployable and have enhanced situational awareness using second generation digitization systems, improved lethality with precision engagement capability, increased survivability with passive and active protection systems, and reduced logistics footprint requirements attained through improved reliability, commonality of components, and reduced resource consumption rates.

Operational Requirement. The operational requirements are not finalized. Initial requirements include rapid deployability, precision delivery of both LOS and BLOS munitions effective against a wide range of air and ground targets, multiple mission task capability, countermine capability, and effectiveness in all terrain and weather conditions.

Program Status. In response to the draft MNS, the Army partnered with the Defense Advanced Research Projects Agency (DARPA) and established an aggressive, collaborative demonstration program. Congress added $3.0M in FY00 and the Army reprogrammed $9.0M additional for a total of $12M in FY00 to support this effort. The Army budgeted funds for the Army/DARPA collaborative program, identified S&T programs that support the FCS initiative, assigned an Army program manager to DARPA, and signed a Memorandum of Agreement (MOA) between the Army and DARPA. The collaborative program will (1) define and validate FCS design/operational concepts using

modeling and simulation and surrogate exercises; (2) fabricate and test an FCS demonstrator with three or more of its desired functionalities (direct fire, indirect fire, air defense, nonlethality, reconnaissance, C2 on the move, and ability to transport troops) suitable for entering EMD and production; and (3) develop selected enabling technologies for use in the demonstrator. To be included in the program, the technologies must be on a path of sufficient maturity to "skip" the traditional PDRR phase of systems development. The desire is to proceed directly to EMD from the demonstrator program. In FY03, the Army must decide if the FCS demonstrator can meet the capabilities envisioned for the Objective Force and be demonstrated in FY06.

Future Scout and Cavalry System (FSCS)

Description. FSCS includes advanced, long-range, multifunction sensors; deployability (one per C-130) and three per C-17; multispectral (visual, thermal, radar, acoustic) signature management; open digital electronic architecture with advanced crew stations to fuse and display data from multiple sources; medium-caliber cannon and/or missiles for self-protection; and state-of-the-art power and propulsion package with embedded training, prognostics, and diagnostics.

Operational Requirement. The FSCS will operate primarily by stealth, within proximity of the threat, and have the capability to receive and transmit real-time combat information.

Program Status. The FY01 funds were zeroed by the Joint Appropriations Committee without prejudice. 7 The Army reprogrammed FY00 funds to support completion of the Advanced Technology Demonstration (ATD) in FY02 as planned. The Army continues to emphasize the need to complete the FSCS ATD in an effort to reduce risk and advance the sensor and platform technologies state-of-the-art to provide options for transition of advanced technologies to the FCS and/or insertion of advanced technologies into the Interim Force.

Assessment

Today, and for the near- and midterms, the mechanized Legacy Force provides the Army's Dominant Maneuver and mobility capability of deploying and conducting Dominant Maneuver operations as part of a joint force. The application of scarce resources means that our extensively task organized forces are equipped with fleets of aging

vehicles and equipment. The pace of operations continues to increase the fleet age of the legacy systems at a high rate. Lack of sufficient funding to recapitalize critical Legacy Force systems will increase the risk to Dominant Maneuver formation readiness until the Objective Force is fielded.

The modernization and upgrade of Legacy Force systems will remain a critical axis as the Army continues to move toward the Objective Force. Additionally, resources will be required to fully modernize the Counterattack Corps with the M1A2 SEP tank and the Bradley A3. Current funding deficits for recapitalization of BFVS, Abrams, and other systems do not allow the Army to meet the DoD half-life metrics for selected systems by 2010 and maintain that standard thereafter. Significant funding deficits remain for the Abrams fleet. While the AIM program improves fleet age and applies selected upgrades, the service life standards cannot be achieved without additional recapitalization funding. Deficits in funding survivability (improved armor packages to include contingency armor and side armor), lethality (tank extended range munitions), reliability (common Abrams/Crusader engine and under armor auxiliary power unit) do not allow the Army to take full advantage of potential O&S cost savings and lethality while taking risks in survivability. The mobility force funding deficit (Grizzly and Wolverine) does not allow the Dominant Maneuver force to take full advantage of situational awareness and rapid mobility and assumes significant risk in maintaining overmatch before FCS can assume the role as the dominant Army combat platform. Survivability is a critical component of maintaining combat overmatch and fully funding this effort will significantly improve force protection throughout Transformation. Fully funding tank extended range munitions will take full advantage of the improved target acquisition attained through the SGF upgrade in the M1A2 SEP, expanding the commander's options on the battlefield. The cost savings realized by fully funding the new tank engine and the under armor auxiliary power unit would significantly improve the reliability of the force and empower the joint force commander to conduct sustained Dominant Maneuver to rapidly achieve objectives. Less than full funding assumes risk by not modernizing all legacy formations and the Army prepositioned stocks with the M1A2 SEP tank, M1A1 D, Grizzly, Wolverine, or the Bradley A3. Any delay in the fielding of the FCS will require additional funding for the recapitalization of the Abrams and Bradley platforms as well as other legacy systems. Early deployers relying on APS equipment (not modernized) while the Counterattack Corps deploys by sea encounter significant risk until the Objective Force is fielded.

Although terminated to partially fund Army Transformation, the Grizzly and Wolverine remain critical requirements for the mechanized force to achieve Dominant Maneuver. This termination will require the mechanized force to rely on dwindling and obsolete mobility and countermobility systems until the Objective Force is fielded. Our assault bridging capability is provided by the only M48/M60 system remaining, the

AVLBs (average fleet age is 24 years and the last AVLB was produced in 1973). The termination of the Grizzly breacher means that our soldiers will once again be removing mines by hand. No alternative solution exists to meet this capability. The deficit in mobility introduces risk by not allowing commanders to take advantage of operational opportunities created by the improved situational awareness provided by digitization. The commander's flexibility of maneuver is compromised.

The Counterattack Corps' required capability is a three mechanized division corps and an armored cavalry regiment with decisive combat overmatch for major regional conflict or Major Theater War (MTW) counteroffensive operations, trained and ready throughout Transformation. The current assessment indicates that the Army's Counterattack Corps requires additional funding to fully achieve Dominant Maneuver and combat overmatch. Current formations are not modernized or recapitalized. Mobility and countermobility platforms are obsolete. Near-term modernization and recapitalization of the maneuver platforms within the Counterattack Corps is expected by FY04 but falls short of fully inserting critical survivability and lethality capabilities unless additional funding is provided. Mobility force obsolescence will continue to hinder maneuver force mobility until key programs are fully funded or the Objective Force is fielded. Reliance on pre-positioned stocks for early deployers will continue to impact overall combat overmatch until the pre-positioned stocks are fully modernized or the Objective Force becomes the dominant formation in the Army and assumes the role as the Nation's warfighting guarantor on the next battlefield.

Aviation Forces

Overview

Today's Army aviation force remains the best in the world. It provides an asymmetric capability unique to the U.S. Army. The Apache Longbow is the finest attack helicopter in the world. The Comanche is the first Army Objective Force system to be fielded that will perform missions throughout the full spectrum of conflict. Comanche provides enhanced survivability, maintainability, lethality, and unprecedented situational awareness. The Black Hawk and Chinook provide unparalleled lift capability to move forces quickly and decisively. Aviation's speed, agility, and lethality increase the commander's options. The Army's continuing investment in aviation will ensure these capabilities do not erode. They reflect the Army's commitment to an Objective Force capability that is responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

The *Army Aviation Modernization Plan*, forwarded to Congress in April 2000, aligns the aviation modernization strategy with the Army Modernization Vision, Strategy, and Plan. It modifies force structure requirements to meet full spectrum mission requirements, retires legacy aircraft, and redesigns the institutional training base to graduate aviators proficient in their "go to war" aircraft.

Since Operation Desert Storm, aviation's modernization focus was on the dual requirement to attack large fires/maneuver centric targets and air assault light forces. The Aviation Restructure Initiative drove aviation to pure fleet organizations with limited capability to task organize for multifunctional operations. It became apparent early on that, as the Army transformed, aviation too must evolve. This decision was bolstered by a critical imbalance of structure and resources within aviation, particularly within the Strategic Reserve. Recent operational missions in Bosnia and Kosovo uncovered numerous near-term operational and safety deficiencies requiring immediate attention. The subsequent analysis of these issues by Task Force Hawk and The Army Aviation Readiness and Sustainment Task Force, combined with the Army Modernization Strategy, demanded that modernizing Army aviation depart from the 'business as usual" approach and address these issues:

- The requirement to fight across the spectrum of a new operational environment.
- The requirement to sustain warfighting capabilities in the Legacy Force.
- The increasing range of CINC requirements, from engagement to warfighting.
- The need to divest legacy systems no longer contributing to the Army's warfighting capability and focus resources to meet the requirements of transformation to the Interim and Objective Forces.

The Army Aviation Readiness and Sustainment Task Force analysis revealed a number of critical, high-priority readiness, sustainment, and safety issues that are being addressed in the FY02-07 Plan. Many of these—such as SGF and accelerated recapitalization of UH-60, AH-64A, and CH-47—have already received funding and are underway. However, finite resources demand aggressive divestiture of legacy systems and application of resources saved toward interim and objective aviation transformation requirements. Execution of this strategy requires funding the bills associated with retiring legacy AH-1, OH-58A/C, and UH-1 aircraft and fielding these units with modern aircraft.

The *2000 Army Aviation Modernization Plan* took bold steps in defining the strategy necessary to keep aviation integrated in the Army's future operational environment, as well as Legacy, Interim, and Objective Force requirements of our transforming Army. Much work has transpired since this date in refining transition plans, laying the groundwork to begin the transition process, and identifying impediments to successful transition. This annex serves to update the 2000 plan, by refining the **"**Way Ahead**"** for Army Aviation.

Aviation Modernization in Support of Transformation

The *Army Aviation Modernization Plan* is integrated into the tenets of the Army Modernization Strategy. The materiel and organizational strategy for Army Aviation are the cornerstones of aviation transformation. The process is underway with the divestiture of the

AH-1 and planning for UH-1 divestiture in the near term.

Tenets of Modernization Strategy

Focused Science and Technology Effort

The Army Aviation S&T program provides the technologies needed to develop next generation/future systems such as the Future Transport Rotorcraft (FTR), and to sustain and upgrade the operational capabilities of the legacy fleet. These enhanced capabilities are needed to meet the requirements of the future Objective Force as articulated in the Objective Force capabilities statements in TRADOC Pamphlet 525-66. To support these requirements, aviation S&T programs are focused on improvements in turbine engines, drive trains, flight control, rotor blade systems, aircraft survivability equipment, aircraft structural designs and materials, avionics systems design and integration, sensors and weapon systems, and unmanned aerial vehicle (UAV) teaming. Detailed descriptions of these programs can be found in the *Army Science and Technology Master Plan*.

Transforming

Materiel Strategy

The materiel vision for aviation remains largely unchanged from that of previous plans. What has changed is the additional requirement to fit this materiel modernization strategy within the framework of organizational transformation. Aviation's primary aircraft modernization programs continue to be the RAH-66 Comanche, the AH-64D Apache Longbow, the UH-60M Modernized Black Hawk, and the CH-47F Chinook. Supporting programs remain focused on meeting modernization requirements necessary to execute these aircraft modernization programs, as well as addressing near-term capability shortfalls and near- to mid-term requirements such as digitization, Global Air Traffic Management (GATM), logistics automation, and fleet recapitalization.

Organizational Strategy

Materiel modernization alone will not address all of aviation's capability shortcomings. Current aviation force structure is not well suited for stability and support mission requirements. Current aviation battalions must be more deployable, tailorable, and sustainable to meet Army operational requirements. To address these shortcomings, aviation will transform to a structure designed around the multifunctional battalion. This multifunctional battalion is designed with a balanced mixture of attack, reconnaissance, and utility aircraft and augmented with more robust staffs and logistical support.Achieving organizational modernization while keeping our materiel modernization programs on track is not without funding risks. The difficult decision to

accept risk in the near- to midterms by resourcing units in both the AC and RC at less than full authorizations and the realignment of flight training at the schoolhouse provides the conditions necessary to lessen transformation risk and develop an executable plan.

Maintaining and Improving

As the Army moves toward a more deployable and mobile force, aviation will be relied upon to an even greater degree. Reconnaissance and security will become key to protecting the fast-paced, transitional forces of the future. Aviation's lift capabilities will sustain the maneuver force and provide this force the mobility to dictate the battle. Meeting these future needs requires an Aviation modernization strategy that manages fleet life to minimize obsolescing and unsupportable aircraft while meeting the Army's mission requirements for aviation.

- The AH-64D is a key element of the Army's combat overmatch objective, providing unprecedented firepower, survivability, and capability to fight worldwide day, night, or in adverse weather. The AH-64D Apache Longbow represents a key component of the Army's strategy to incrementally improve capability to maintain combat overmatch. Apache Longbow mitigates risk by maintaining combat overmatch in the Legacy Force, and provides an interim bridging capability in the multifunctional battalions of the Aviation Objective Force.
- The UH-60 remains the foundation of the Army's utility helicopter force. The HH-60Q and UH-60M programs address the operational and sustainment problems of the aging UH-60A fleet.
- The CH-47 provides the Army's only heavy-lift helicopter support. An engine upgrade coupled with the CH-47F recapitalization program will address capability shortfalls and extend aircraft life.
- Additional readiness, sustainment, and safety upgrades are programmed for the AH-64, UH-60, OH-58D, and CH-47.
- Fixed-wing modernization is centered on reducing the overall cost of fleet ownership and addressing future GATM requirements for airspace usage.

Aviation's supporting programs (avionics, aircraft survivability equipment, air traffic services, aviation ground support equipment, aircrew integrated systems, and weapons), S&T programs, and Training Aids, Devices, Simulators and Simulations (TADSS) provide the programs and technologies required to sustain, recapitalize, or field next generation/future systems.

Functional Components of Aviation Modernization

Transition

The transition strategy for aviation retires legacy AH-1, OH-58C, and UH-1 aircraft no later than the end of FY07. This is accomplished by accepting risk and aircraft resourcing in the AC and RC to support fleet-wide fielding under the new multifunctional battalion structure with modern aircraft (AH-64A, AH-64D, OH-58D, and UH-

60). This reduced level of resourcing will be required until sufficient RAH-66 Comanche and UH-60 aircraft can be procured to allow fielding to full requirements. Under current resourcing, the retention of the OH-58D Kiowa Warrior will be required until beyond FY10. This drives the requirement to continue the SEP modifications (crashworthy seats, cockpit air bags, improved displays, upgraded engine, and limited digitization) to address engine ingestion problems, which are driving up support costs, and to examine the long-term supportability and obsolescence issues (particularly with the mast-mounted sight).

To execute the transition strategy, RAH-66 must remain on schedule, and transition costs (fielding, training, and equipment/parts) must be funded to allow for cascading of modern aircraft and support equipment to the ARNG. The resourcing risk created by inadequate numbers of UH-60s will also extend through the far term without an increase in currently programmed UH-60 procurement. With the exception of the Air Assault Division (which converts to the objective structure in the far term), the aviation transformation does little to impact cargo aircraft (CH-47) requirements and fielding. Affordability and objective requirements for the FTR will determine if additional CH-47Ds must be remanufactured into the CH-47F configuration. The FTR is the Army's objective heavy lift aircraft, capable of significantly greater range and payloads than the CH-47 for cargo/troop transport to meet the transport requirements of the FCS.

Discussion of equipment

AH-64D Apache Longbow

Description. The AH-64D is a key element of the Army's ability to maintain combat overmatch in the Legacy Force. The AH-64D remanufacture effort incorporates a millimeter wave Fire Control Radar (FCR), Radar Frequency Interferometer (RFI), fire-and-forget radar-guided HELLFIRE missile, and cockpit management and digitization enhancements.

Program Status. A total of 227 FCRs are programmed for procurement. Current funding limits AH-64D production to 501 aircraft, leaving 241 AH-64As in the fleet and falling 99 aircraft short of the requirement under the objective aviation force.

This reduction (from 530 in the FY01-05 Plan) was driven by the requirement to correct priority recapitalization issues not addressed through the AH-64D program. Each of these 501 AH-64Ds will also receive a modernized SGF target acquisition/pilotage system, replacing the maintenance-intensive, first generation, common module system, increasing target acquisition range, and

improving pilotage system resolution and safety. To fully extend the AH-64 life, additional recapitalization requirements remain, particularly for certain dynamic components such as the main rotor head/blades, drive system, and transmission. The AH-64D will begin reaching its replacement point in FY18. As noted above, the RAH-66 is the designated replacement for the AH-64 in the far term.

UH-60L Black Hawk

Description. The UH-60 is the Army's objective utility/Medical Evacuation (MEDEVAC) helicopter. The UH-60 is relied upon to perform air assault, air movement, MEDEVAC, and airborne C2. The current utility fleet consists of the UH-1 and UH-60A/L/Q.

Program Status. Approximately 560 legacy UH-1s remain in the force, possessing inadequate lift, range, survivability, and speed to accomplish utility requirements. These aircraft have become increasingly problematic, with numerous groundings due to safety risks and steadily increasing operating and support costs. At the end of the FY02-07 Plan, the UH-60 shortage will be approximately 330 aircraft. Additional procurement has been programmed in the far term (10 per year) to narrow this gap. Just over 900 UH-60As, which began production in 1979, are in critical need of recapitalization. Limited procurement of UH-60Ls and the rate that UH-60As are being scheduled for recapitalization will posture the ARNG to experience difficulty maintaining unit readiness. This impact is due to a lack of aircraft availability and decreasing operational readiness rates. The UH-60M

recapitalization program is scheduled to begin production in FY03 to bring these aircraft up to UH-60L standards, incorporate more modern and interoperable avionics, and extend aircraft life. The UH-60M MEDEVAC (to be designated HH-60M) will also incorporate medical equipment upgrades (telemedicine, enhanced MEDEVAC kit, built-in rescue hoists, and onboard oxygen generation). In addition to detailing the UH-60M requirements, the recently approved UH-60M modernization ORD details improved lift and range requirements for a Block 2 upgrade, referred to as the UH-60X. This program, now known as the Future Utility Rotorcraft (FUR), is facing technology and funding challenges. Procurement of the FUR is expected to occur sometime after 2010.

CH-47 Chinook

Description. The CH-47 Chinook modernization program includes an engine upgrade and recapitalization of the CH-47D to the CH-47F. These efforts buy back CH-47D lift capabilities, insert digital capabilities, and extend aircraft life by approximately 20 years.

Program Status. The engine upgrade production began in FY00 and will

continue throughout the FY02-07 Plan. It will be applied fleet-wide to restore lift capabilities lost through years of aircraft weight growth caused by modifications. The CH-47F modifications will remanufacture the aircraft, reduce aircraft vibration (thereby lowering O&S costs), and insert digital technologies to support interconnectivity and situational awareness. The CH-47F modifications will begin in FY02 and ramp to a maximum production rate of 26 aircraft per year in FY04. Anticipating the introduction of the Joint Transport Rotorcraft in 2015, the Army only planned for 300 of the 431 CH-47 aircraft in the fleet for recapitalization.

RAH-66 Comanche

Description. The Comanche is the Army's objective reconnaissance and attack aircraft. It is a twin engine (T-801) aircraft with all-composite fuselage, second generation targeting and pilotage sensors, and low observable design. Both cockpits are identical, allowing all pilotage and mission equipment tasks to be conducted from either seat and reducing the pilot training burden. The weapon systems are stowed internally until needed and include laser-guided and Longbow HELLFIRE missiles, air-to-air missiles, Hydra-70 rockets, and a 20mm Gatling gun. Supportability (based on two-level maintenance) has been a key design parameter of the Comanche program. Supportability features include embedded diagnostics, minimal special tools, a

reduction in support equipment requirements, and fewer parts**.** The Comanche is self-deployable 1,206 nautical miles on one fuel load in ten hours, and is capable of deploying via air transport to any theater in 96 hours.

Program Status. Two RAH-66 prototypes are currently flying in the EMD phase. The current program initiates production in FY04, leading to an IOC in December 2006 and a production ramp to 62 aircraft per year in FY10. The recent program restructure, accomplished without increasing program cost or risk, accelerates the integration of the FCR and allows demonstration of this capability at IOC. The RAH-66 acquisition objective is 1,213. Comanche remains the most likely replacement for the AH-64 in the far term. This would further reduce the training burden and simplify supportability requirements.

OH 58D Kiowa Warrior

Description. The OH 58D continues as the armed reconnaissance helicopter for attack and air cavalry

units until fielding of the RAH-66 begins. It is capable of performing reconnaissance security, C2, target acquisition/designation, and defensive air combat missions.

Program Status. The SEP program began in 1997 and will be completed in 2005. The OH 58D will be replaced by the Comanche beginning in 2007 and is projected for retirement by 2014.

Fixed Wing Modernization

The Army's fixed-wing fleet performs Operational Support Airlift (OSA), Special Electronic Mission (SEMA), cargo, and dedicated support missions. The goal of fixed-wing modernization is to insure mission effectiveness is maintained while reducing the overall cost of fleet ownership. The major thrust within fixed-wing modernization is procurement of the UC-35 medium range jet to replace aging, turboprop C-12s. Fixed wing modernization also includes GATM compliance across the fleet and cockpit digitization. Efforts are currently underway to refine fixed-wing doctrine in accordance with objective Army requirements. This effort will provide the direction and focus to allow identification of requirements for the next generation of fixed-wing aircraft.

Supporting Capabilities Modernization

Essential to the support, sustainment, and modernization of the aircraft programs discussed above are aviation's supporting capabilities. These programs (aircraft survivability equipment, avionics, aircrew integrated systems, air traffic services/air traffic control, aviation ground support equipment, weapons, TADSS, and essential S&T) impact aviation's efforts to sustain and recapitalize the Legacy Force and field aviation Objective Force capabilities.

Aircraft Survivability Equipment (ASE). ASE is critical to aircraft survivability, particularly in the lethal threat environments that aviation forces will face in the 21st century. The Suite of Integrated Infrared Countermeasure (SIIRCM) that includes the Advance Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS) system and Suite of Integrated Radio Frequency Countermeasures (SIRFC) are the two most critical ASE programs for Army aviation. SIIRCM is the next generation of infrared countermeasures and will include passive missile warning, active IR jamming, and IR countermeasures expendables. SIIRCM is required for 2,559 aircraft with FUE scheduled for FY03. Funding for SIIRCM supports limited production beginning FY02 and 151 systems procured by the end of FY07. The SIRFC consists of the Advanced Threat Radar Warning Receiver (ATRWR) and the Advanced Threat Radar Jammer (ATRJ). The SIRFC program has been deferred until beyond FY05 for all aircraft except

for Special Operations Aviation (SOA), risking vulnerability in the near term against radio frequency (RF) threat systems. Another important ASE system, the AN/AVR-2A, is a passive laser-warning receiver. It receives, processes, and displays illumination by laser designators, rangefinders, and beam riding missiles providing sufficient warning to the crew to allow evasive maneuver. Approximately 50% of the required systems have been procured, but the remaining requirement is unfunded.

Aviation Electronics (Avionics). Essential to achieving Information Dominance, avionics programs are designed to ensure aviation meets combined arms and joint requirements for C2, mission planning, communications, navigation (including worldwide civil airspace), information interchange, and interoperability. Avionics funding and production schedules are not synchronized with the current schedule for digitizing the Army. Critical aviation requirements exist for the Joint Tactical Radio System (JTRS) as the objective radio supporting robust Tactical Internet connectivity on the digitized battlefield. Embedded Battle Command (EBC) software in the Improved Data Modem (IDM) is essential to meet aviation interoperability requirements of the Tactical Internet in the near term. Key to effective operations is the precision navigation capability provided by the GPS systems supporting scout/attack and cargo/utility aircraft. GPS preplanned product improvement must be supported to overcome susceptibility to enemy countermeasures. Efforts are underway to begin fielding a modern airborne C2 system for the UH-60 (Army Airborne Command and Control System (A2C2S)) and aviation enhancements such as the Aviation Mission Planning System and improved high frequency radios to the Army's digital TOC architecture prior to the Digital Corps Exercises in FY04. As early as 2001, Army aircraft will be mandated to comply with GATM requirements in Europe, followed by other geographical regions. GATM requirements, which are only partially funded, vary by aircraft and region and must be addressed to permit continued flight in civil airspace and minimized operational flight restrictions.

Aircrew Integrated Systems (ACIS). The ACIS program encompasses items of equipment needed to protect, sustain, and enhance the performance of Army aircrews during flight, ground, and survival-evasion operations. The primary ACIS program is Air Warrior. Air Warrior is an integrated, mission-tailorable ensemble that improves aircrew performance in Mission Oriented Protective Posture (MOPP IV), reduces weight and bulk, and improves mobility and survivability. It reduces human physiological limitations that preclude full utilization of aircraft capabilities. Subsystems include Laser Eye Protection, Joint Protective Aircrew Ensemble, Aircrew Microclimatic Cooling System, Combat Survivor Evader Locator, Modular Integrated Helmet Display System, Joint Service Aircrew Mask, and Electronic Data Manager. Recent funding cuts have stretched Air Warrior procurement out to FY16 to fulfill aviation requirements.

Air Traffic Services/Air Traffic Control (ATS/ATC). Army ATS is an important but often overlooked component of Army aviation and is critical to aviation safety and survivability on the modern battlefield. Tactical ATC supports Army and land component commanders' automated airspace C2 requirements and ATC for joint civil coalition and service aircraft operating in terminal and rear areas. Additionally, ATS are critical to the support of our fixed-base force projection platforms and the support of safe and efficient movement of Army aircraft operating from Army airfields worldwide. Major ATS programs include the Air Traffic Navigation, Integration, and Control System (ATNAVICS), Tactical Airspace Integration System (TAIS), and the Mobile Tower System (MOTS). Fixed-base ATC is closely aligned with the Federal Aviation Administration's (FAA) National Airspace System (NAS) modernization efforts. Major programs include the Digital Airspace Surveillance Radar (DASR), the DoD Advanced Automation System (DAAS), Fixed Base Precision Approach Radar (FPAR), and Airfield Status Automation System (ASAS). The majority of ATS/ATC programs have had procurement stretched beyond the planning period. In addition, a critical need exists to fund ABCS connectivity into TAIS and to replace obsolescing tower simulators with the Enhanced Tower Simulator (ETOS).

Aviation Ground Support Equipment (AGSE). Future aviation maintenance will incorporate total automation, strategic modularity, and multifunctionality and will support a reduced logistics footprint. The objective logistics architecture will be based upon the Combat Service Support Control System (CSSCS) and the Global Combat Support System-Army (GCSS-Army). Modernization of AGSE focuses on two areas of development: modernization of Test, Measurement, and Diagnostics Equipment (TMDE) and recapitalization of aging AGSE. The modernization of AGSE remains a challenge with the limited funding available. However, a modern logistics system is mandatory to achieve the Army's strategic responsiveness goals. Unfunded/underfunded programs include the Digital Source Collector, Aviation Intermediate Maintenance Containerization and Modernization Program (AVIM-CAMP), Shop Equipment Contact Maintenance, and the New Aviation Ground Power System (NAPS).

Weapons. Weapon system modernization is essential to maintain or improve combat overmatch and to provide for aircraft self-protection. Production of the Longbow HELLFIRE missile, which began in FY97, will end at 12,905 missiles in FY03. The requirements for a modernized HELLFIRE are being developed to replace the laser HELLFIRE missile, whose shelf life will expire by 2014. Modernized HELLFIRE will be aviation's objective heavy missile system, combining the precision-point target capability of the laser HELLFIRE and the adverse weather/obscured battlefield/fire-and-forget capability of the Longbow HELLFIRE. FUE for Modernized HELLFIRE is projected for the FY08 timeframe. The Advanced Precision Kill Weapon System (APKWS) remains unfunded. This weapon is intended to fill the gap

between the current unguided 2.75" Hydra-70 rocket system and the HELLFIRE antitank missile system. It will provide aviation with a precision capability against lightly armored targets at significantly lower cost and weight. The M-60D door gun for the UH-60 and CH-47 has been in the inventory since the 1960s and is becoming increasingly unreliable and costly to maintain. The new M240D, a variant of the ground M240 7.62mm machine gun, will provide greatly improved reliability and increased rates of fire.

Training Aids, Devices, Simulators, and Simulations (TADSS). TADSS modernization is critical to aviation combat effectiveness and our ability to train effectively within resource constraints. TADSS modernization hinges on:

- Fully resourcing the Aviation Combined Arms Training Strategy (CATS) to validate the training conducted in the virtual and constructive environment.
- Fielding the Aviation Combined Arms Tactical Trainer-Aviation Reconfigurable Manned Simulator (AVCATT-A).
- Maintaining simulator concurrency in legacy aircraft simulators to ensure these devices replicate the aircraft they are designed to support.

Another important facet of training is implementation of Flight School XXI. Flight School XXI realigns the flight school to meet warfighting requirements by producing aviators who arrive at their initial duty station basic mission qualified. It eliminates all UH-1 and OH-58C training aircraft, returns instructor pilots to the field, and leverages simulator potential. Additional aircraft requirements to execute this strategy are 51 TH-67s, 45 UH-60s, 11 OH-58Ds, 13 AH-64s, and 16 CH-47s. The aviation transition strategy accounts for these requirements with the exception of the additional TH-67s.

Assessment

The *Army Aviation Modernization Plan* aligns the aviation strategy with the Army Vision, modifies force structure requirements to meet full spectrum mission requirements, retires older/obsolete aircraft, and redesigns the institutional training base to graduate aviators proficient in their “go to war” aircraft. Execution of this strategy requires the Army to fund the bills associated with retiring legacy AH-1, OH-58A/C, and UH-1 aircraft and fielding these units with modern aircraft. A number of critical, high-priority readiness, sustainment, and safety issues have been identified which must also be addressed in the near term. Funding decrements have also resulted in slipped, stretched, and unfunded programs. This is particularly troublesome in the digitization area, where aviation does not appear postured to be a full-time player on the digital battlefield in the timeframe established by the Army.